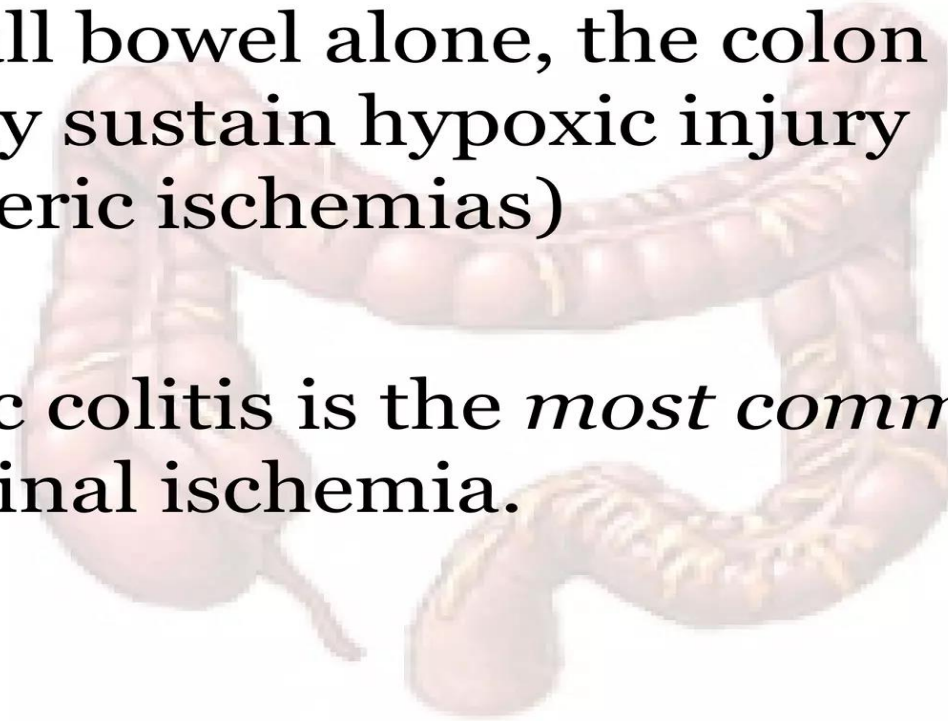


Ischemic Colitis

Ischemic Colitis

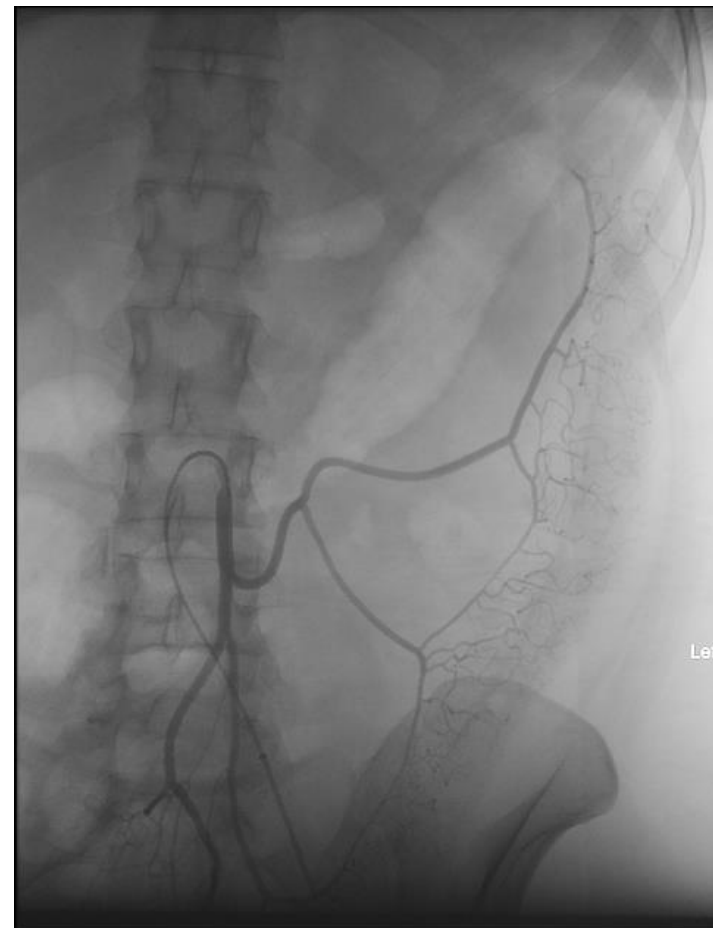
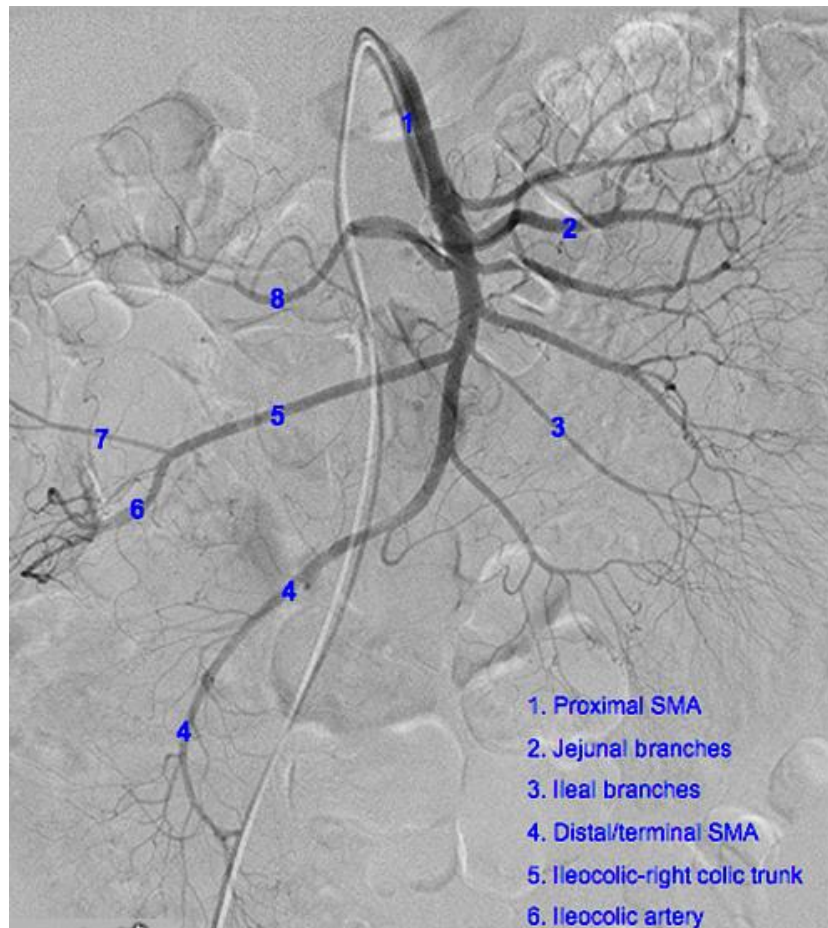
- ▶ Relatively common in the elderly
- ▶ Spectrum of disease ranging from mucosal ischemia to gangrene
- ▶ Real incidence uncertain
 - ▶ 1.7 cases per 1000 autopsy series in Sweden

Ischemic Colitis- Introduction

- The small bowel alone, the colon alone, or both may sustain hypoxic injury (mesenteric ischemias)
 - Ischemic colitis is the *most common* form of intestinal ischemia.
- 

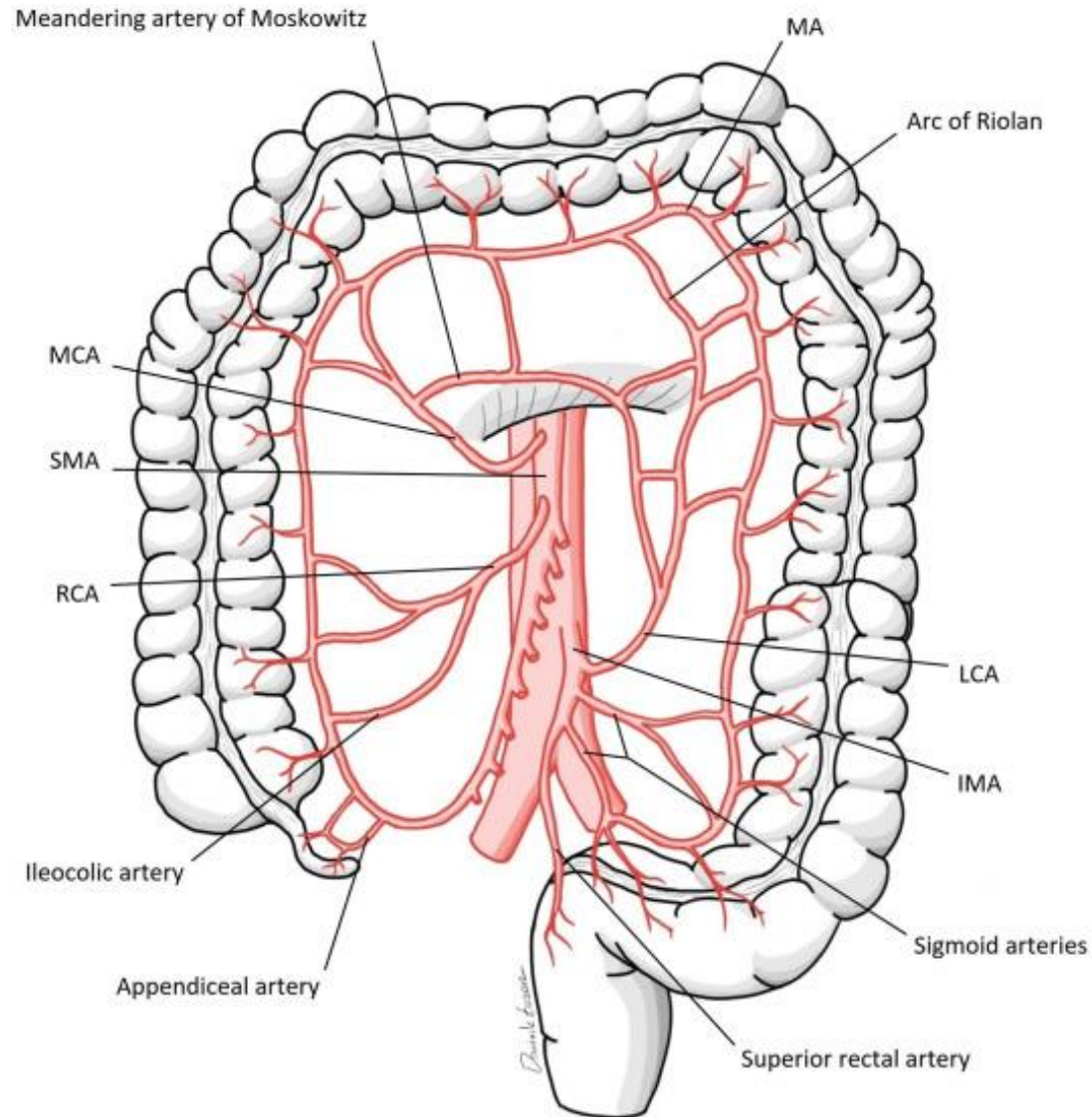
Colonic Circulation

- ▶ Contributions from superior and inferior mesenteric and iliac arteries
- ▶ Less blood supply weight-for-weight compared to small bowel

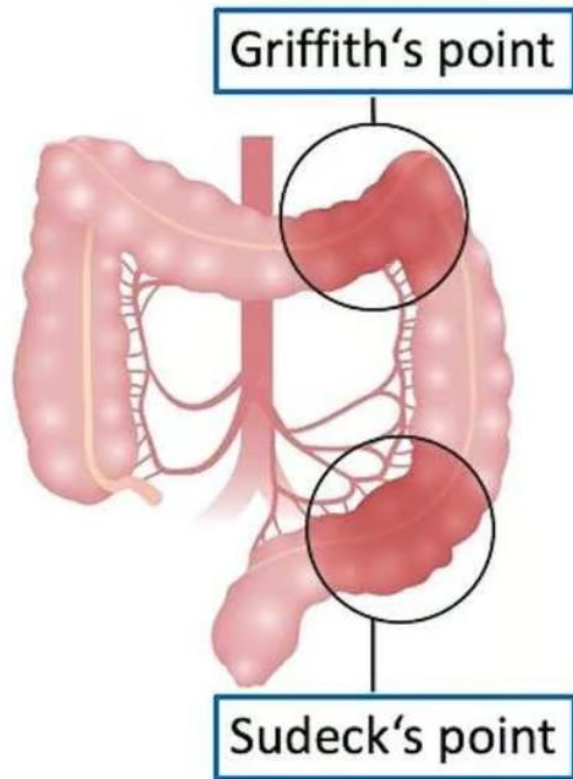


Colonic Circulation

- ▶ Marginal artery of Drummond
- ▶ Arc of Riolan
- ▶ Meandering artery of Moskowitz



Colonic Circulation: Watershed Areas



- Splenic flexure (superior and inferior mesenteric arteries watershed) - **Griffith's point**
- Rectosigmoid junction (inferior and hypogastric arteries watershed) – **Sudeck's point**

Pathophysiology

- ▶ Main vessel occlusion is rare
- ▶ Transient low-flow state with degenerative narrowing of small vessels in the elderly
- ▶ Maybe associated with vasoconstriction and increased metabolic demand

Specific causes

- ▶ After AAA repair
- ▶ MI
- ▶ Shock
- ▶ Cardiopulmonary bypass
- ▶ Hypercoagulable states
- ▶ Vasculitis
- ▶ Marathon running
- ▶ Cocaine

Table 1. Conditions that predispose to ischemic colitis

Cardiac failure or dysrhythmias
Shock (sepsis, hemorrhagic, hypovolemic)
Strenuous physical activities, ie long-distance running
Arterial thrombus
Cholesterol emboli
Inferior mesenteric artery thrombosis
Mechanical colonic obstruction
Tumors
Adhesions
Volvulus
Strangulated hernia
Diverticulitis
Intestinal prolapse
Hypercoagulable states
Protein C and S deficiencies
Antithrombin III deficiency
Anticardiolipin syndrome
Vasculitis
Systemic lupus erythematosus
Polyarteritis nodosa
Wegner granulomatosis
Rheumatoid arthritis
Takayasu arteritis
Thromboangitis obliterans
Iatrogenic surgical/procedural causes
Aneurysmectomy
Aortic surgery
Coronary artery bypass surgery
Colonic surgery
Colonoscopy
Barium enema
Gynecologic surgery
Sickle cell disease
Hemodialysis
Thrombotic thrombocytopenia purpura
Airplane flights
Intra-abdominal inflammatory diseases
Schistosomiasis
Aortic dissection
Ruptured ectopic pregnancy
Trauma

Table 2. Medications associated with ischemic colitis

Antihypertensive agents
Cocaine
Diuretics
Nonsteroidal anti-inflammatory agents
Digoxin
Estrogens
Oral contraceptives
Vasopressin
Pseudoephedrine
Alosetron
Danazol
Sumatriptans
Psychotropic drugs
Amphetamines

After AAA repair

- ▶ 5% of cases
- ▶ Requires high index of suspicion and early colonoscopy
- ▶ Trial of implantation of IMA after AAA repair: of 128 patients with patent IMA randomized - ischemia in 6 patients after implantation and 10 patients without implantation

Austria, J Vasc Surgery, 2008

Hypercoagulable States

- ▶ Coagulation abnormalities found in 28% of patients compared with 8.4% in general population
- ▶ Abnormalities include
 - ▶ Factor V
 - ▶ Activated protein C resistance
 - ▶ Protein S deficiency
 - ▶ Anticardiolipin antibody

Canton Ohio, Southern Medical Journal, 2004

Phases of Ischemic Colitis

- ▶ Regardless of mechanism, the disease follows the same of course

1) Transient Ischemia	Mucosal infarction and ischemic damage confined to Mucosa
2) Partial-thickness ischemia	Mural infarction extending from mucosa to muscularis mucosa
3) Full thickness ischemia	Transmural infarction

Clinical Picture

Bearing in mind the aforementioned type of patient

- ▶ Mild colicky abdominal pain
- ▶ Passage of bright red or dark red blood mixed with stool
- ▶ Anorexia, nausea and vomiting with distention
- ▶ Peritoneal signs (15%)
- ▶ Mild tenderness and poor signs especially early on

Investigations

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Laboratory Investigations

- ▶ Normal in mild cases
- ▶ Severe ischemia/necrosis
 - ▶ Leukocytosis
 - ▶ Metabolic acidosis
 - ▶ Elevated lactate

Imaging

- ▶ Plain Radiography
 - ▶ Dilatation
 - ▶ Thumbprinting

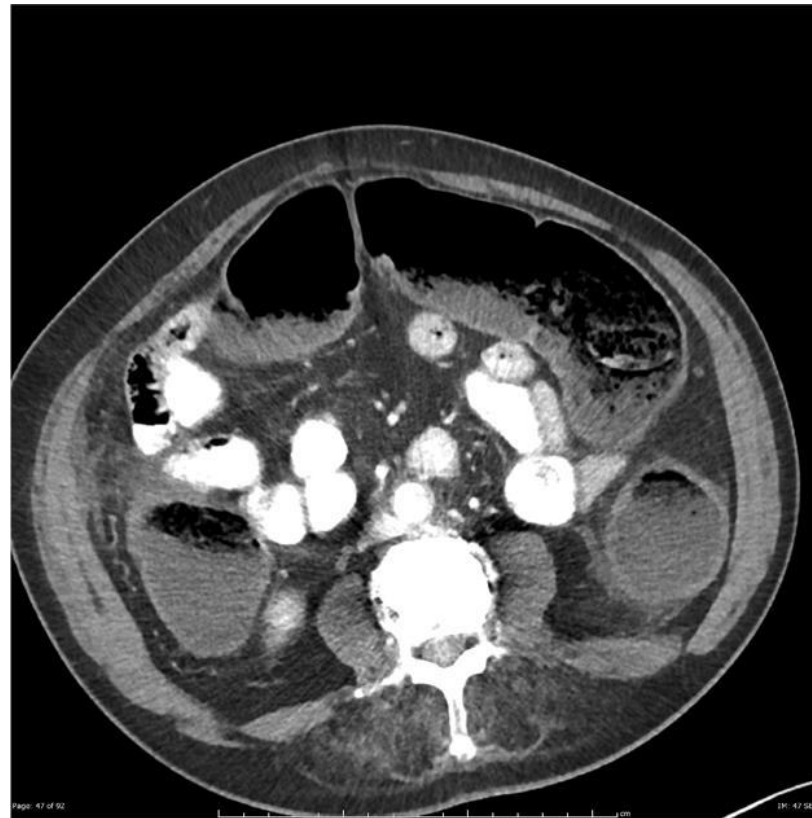


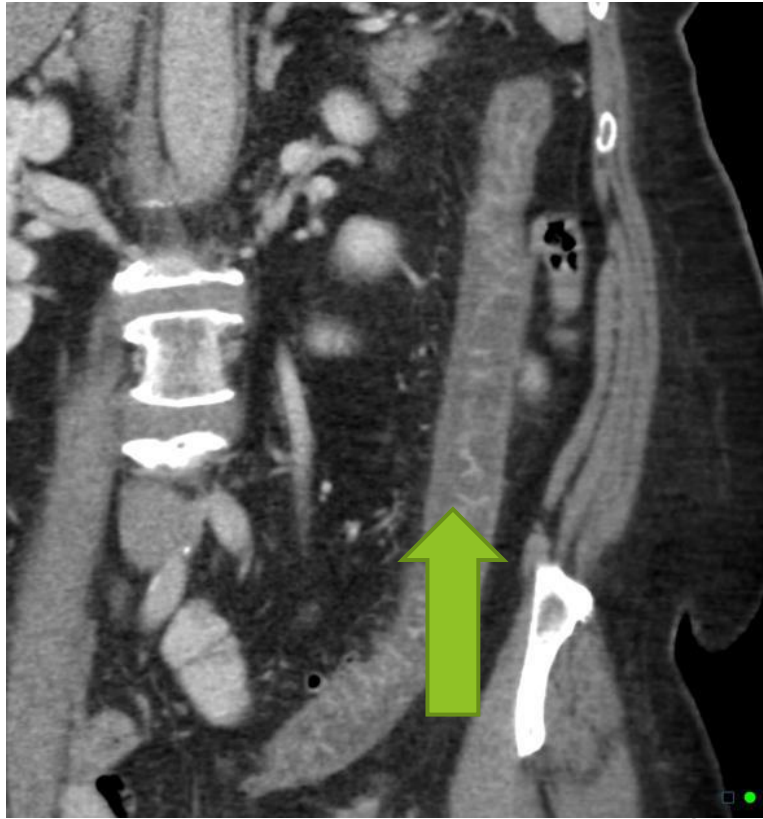
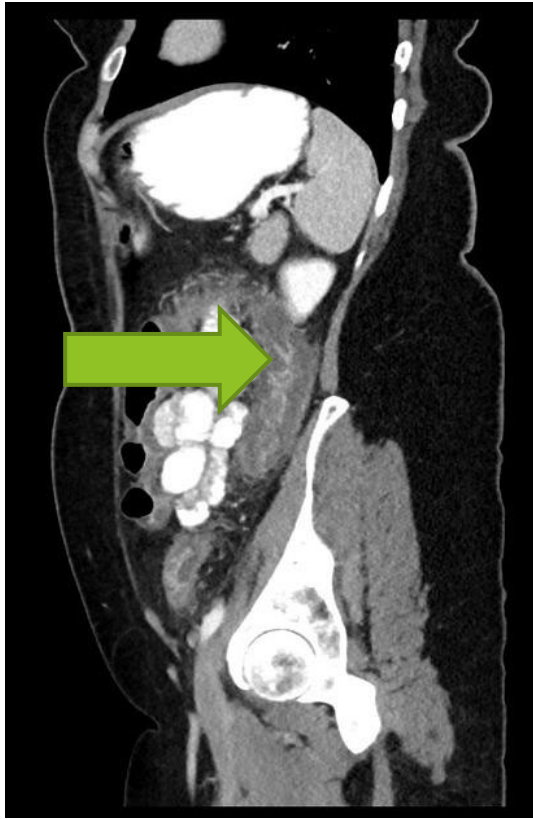
Imaging

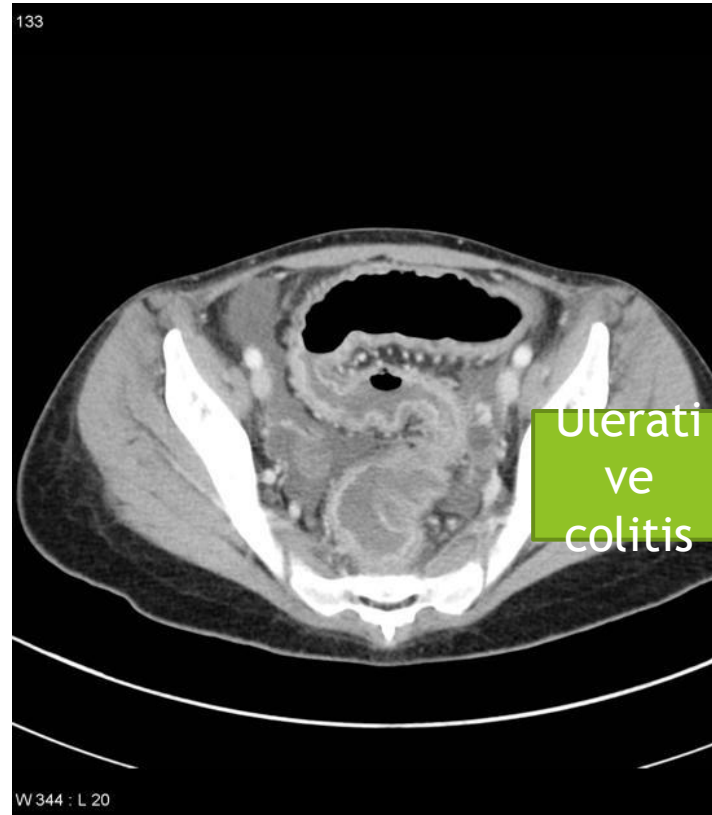
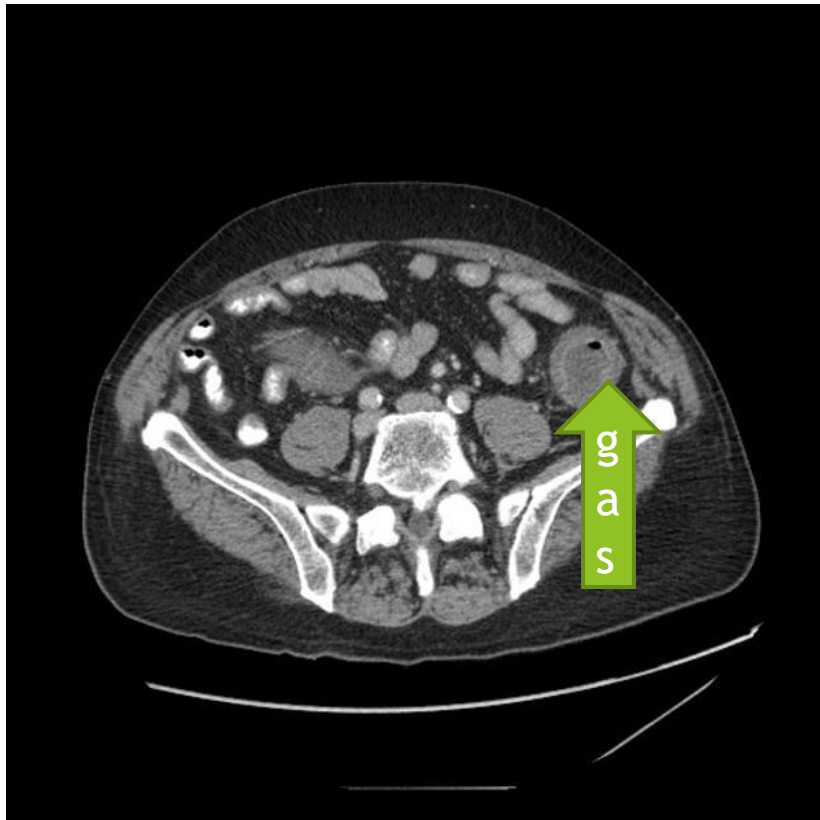
- ▶ Post Contrast CT scan
 - ▶ Irregular narrowing of bowel lumen
 - ▶ Pneumatosis
 - ▶ Dilation proximal to ischemic segment
 - ▶ Mesenteric vasculature (angiography rarely helpful)

CT Contrast enhanced imaging (ideally with an arterial phase) is the modality of choice.

- ▶ bowel wall thickening (common), usually uniform and segmental, rarely localized and mass-like 10
- ▶ low-density ring of submucosal edema between enhancing mucosa and serosa (target sign)
- ▶ **bowel dilatation**
- ▶ pneumatosis coli (uncommon) 13
- ▶ peritoneal/retroperitoneal cavity findings
- ▶ pericolic fluid or fat stranding (common)
- ▶ peritoneal free fluid and mesenteric edema
- ▶ pneumoperitoneum / pneumoretroperitoneum
- ▶ vascular findings
- ▶ vascular occlusion (superior or inferior mesenteric artery or vein)
- ▶ portal and mesenteric venous gas 13
- ▶ **Secondary findings supportive of an ischemic etiology include the presence of parenchymal ischemia/infarction in other abdominal organs, such as the liver, kidneys, and spleen.**

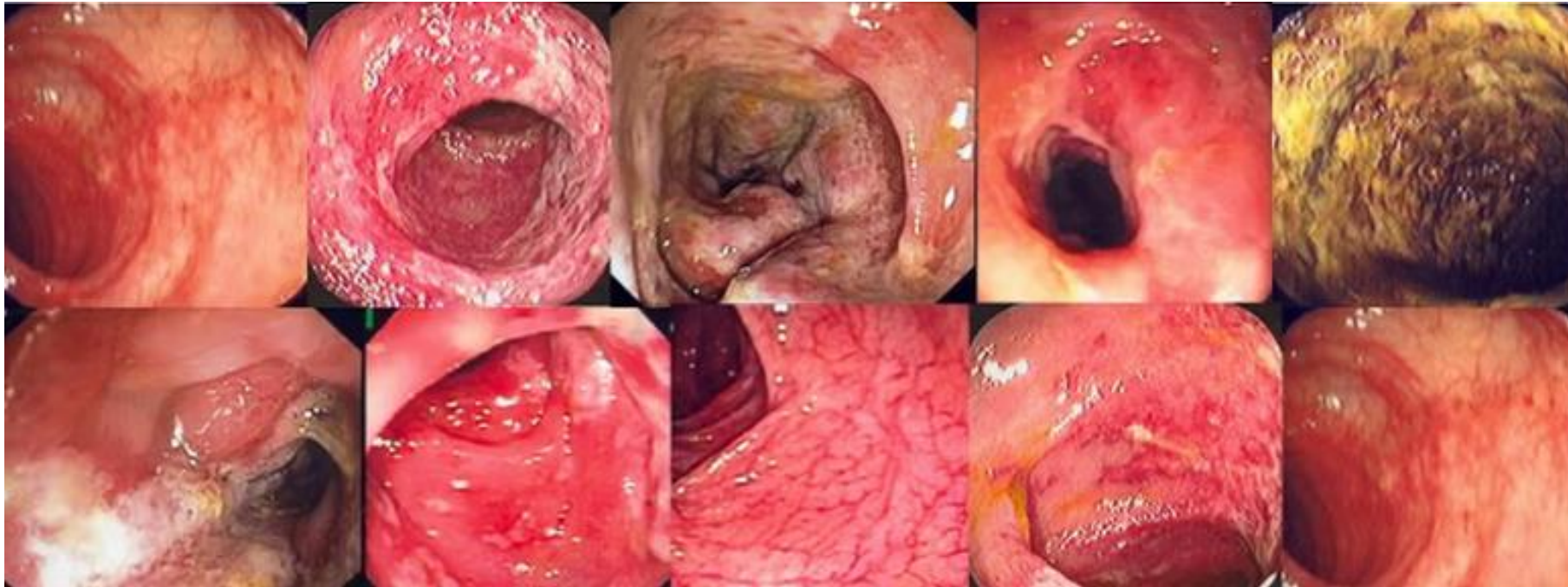






Colonoscopy

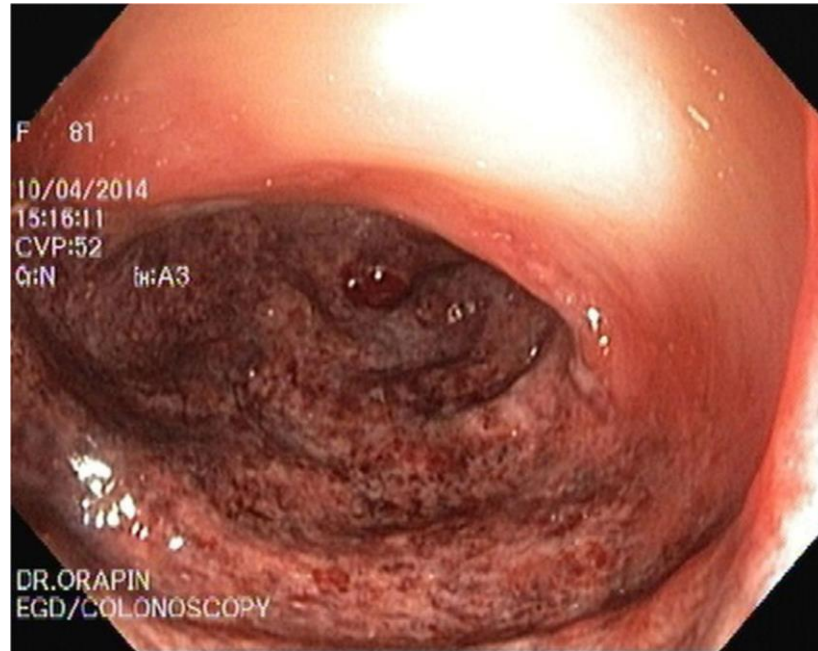
- ▶ Endoscopic spectrum of ischemic colitis



- ▶ Hemorrhages, edema, fragile mucosa, erosions and ulcerations, and sharply defined segments of involvement

Colonoscopy

- ▶ Zuckermann's Sign 'colonic single-stripe sign'—a linear ulcer running longitudinally, commonly found along the antimesenteric colonic wall at the sigmoid colon—typical of ischaemic colitis



Management

Indications for Surgery

- ▶ Peritonitis (at presentation or after observation)
- ▶ Infarction/ necrosis on colonoscopy
- ▶ Colonic stricture
- ▶ Free intraperitoneal air
- ▶ intramural gas, intraportal gas



Management

Suspect Ischemic Colitis

Assess ABCDs of Ischemic Abd pain

- Abd pain
- Bleeding
- Cramping
- Diarrhea

Evaluate Severity

1. Obtain a CT abd/pelvic w/ contrast
2. Assess for any of **9 Risk Factors**

Male	HR > 100	BUN > 20
Abd pain w/o GIB	WBC > 15k	Na < 136
SBP < 90	Hgb < 12	LDH > 350

Severe if any of following:

- >3 Risk Factors
- Peritoneal signs
- Pneumatosis or venous gas on imaging
- Mild/moderate with eventual colonoscopy showing IRCI or pan-colonic involvement

Moderate*

1 to 3 risk factors

Mild

No risk factors

Manage Patient

*Determine if imaging shows vascular occlusion or obtain CTA for suspected vascular occlusion if initial imaging has isolated right colonic involvement (IRCI)
 - Supportive care entails hemodynamic and electrolyte stability

- Tx to SICU
- Surgical eval for abdominal exploration and segmental resection
- Broad spectrum Abx
- Supportive Care

+ Vascular Occlusion on Imaging

- Systemic anticoagulation
- Consider vascular intervention

-No Vascular Occlusion on Imaging

- Obtain colonoscopy & biopsy
- Broad spectrum Abx
- Supportive Care

- Consider colonoscopy and biopsy
- Observation and supportive care

Thank you

The background features a series of overlapping, semi-transparent green triangles and polygons in various shades, ranging from light lime green to dark forest green. These shapes are primarily located on the right side of the frame, creating a dynamic, layered effect against the white background.